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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/802,874
Filing Date: March 18, 2004
Appellant(s): MATSUNAGA ET AL.

SUGHRUE MION, PLLC
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/15/2008 appealing from the final Office action mailed 07/11/2008.

The appeal brief is filed in the new format under the revised BPAI final rule before the effective date of the BPAI final rule. The Office published the BPAI final rule to amend the rules governing practice before the BPAI in ex parte patent appeals. *See Rules of Practice Before the Board of Patent Appeals and Interferences in Ex Parte Appeals; Final Rule, 73 FR 32938 (June 10, 2008), 1332 Off. Gaz. Pat. Office 47 (July 1, 2008).* However, the effective date for the BPAI final rule has been delayed. *See Rules of Practice Before the Board of Patent Appeals and Interferences in Ex Parte Appeals; Delay of Effective and Applicability Dates, 73 FR 74972 (December 10, 2008).* In the notice published on November 20, 2008, the Office indicated that the Office will not hold an appeal brief as non-compliant solely for following the new format even though it is filed before the effective date. *See Clarification of the Effective Date Provision in the Final Rule for Ex Parte Appeals, 73 FR 70282 (November 20, 2008).* Since the appeal brief is otherwise acceptable, the Office has accepted the appeal brief filed by the appellant.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(4) Status of Amendments After Final

No amendment after final has been filed.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

U.S. PATENT	INVENTOR	ISSUE DATE
4,438,931	Motomiya	03/27/1984
5,205,560	Hoshi et al	04/27/1993
5,255,913	Tsuchida	10/26/1993

5,346,217	Tsuchiya et al	09/13/1994
5,538,246	Dekura	07/23/1996
6,056,649	Imai	05/02/2000
6,332,847	Murphy et al	12/25/2001
6,634,958	Kusumoto	10/21/2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-20 STAND rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya (U.S. Patent No. 5,346,217) in view of Motomiya (U.S. Patent 4,438,931), Hoshi (U.S. Patent No. 5,205,560), Tsuchida (U.S. Patent No. 5,255,913), Kusumoto (U.S. Patent 6,634,958), Murphy (U.S. Patent No. 6,332,847), Dekura (U.S. Patent No. 5,538,246) and Imai (U.S. Patent No. 6,056,649).

As to the claims in general, the patent to Tsuchiya shows every feature claimed with the exception of 1) a crown and side portion that each have a Young's modulus lower than the face and sole portions, 2) a rib on the sole portion, 3) the specific claimed Young's modulus values and 4) an intersection angle between the crown portion and the side portion is larger than 90 degrees. Moreover, Tsuchiya fails to disclose that the

crown and at least a part of the side portion are collectively press-molded together while the face and sole are molded separately therefrom. Instead, Tsuchiya shows that the club head pieces are of substantially the same material, while the thickness of selective pieces, notably the crown, is thinned in order to provide added repulsion force to a struck ball, thereby resulting in a longer flying distance (see the abstract in Tsuchiya).

As to claims 1, 7 and 13-15, the teaching reference to Tsuchida is cited to show that it is old in the art to provide a golf club head with a top portion that exhibits a lower modulus than the remainder of the shell. More specifically, the crown portion (5) is made of a first material with a modulus of 210 GPA, while the remainder of the shell is made of a material having a modulus of between 150-250 GPA (col. 6, lines 44-57). Although Tsuchida is mainly concerned with a club head in which the center includes a core material (12), a similar arrangement showing the flexibility of the crown is evidenced in a club head having a hollow interior, such being the case with the further teaching to Hoshi. Specifically, Hoshi shows a club head in which the crown portion (14b) is made of a material wherein the Young's modulus differs from the modulus of at least the sole portion (col. 6, lines 4-16). In a manner similar to Tsuchida, the crown in the Hoshi device is allowed to flex during impact of the clubface with a ball so that the flight distance of the ball is increased and the sweet spot area of the clubface is enlarged to better enhance the directional stability of a struck ball. See col. 1, lines 35-45 in Hoshi and col. 6, lines 18-29 in Tsuchida. All of Tsuchiya, Hoshi and Tsuchida are concerned with enhancing the repulsion characteristics of the face for increasing the flying distance of a struck golf ball. Thus, in view of the patents to Hoshi and Tsuchida,

it would have been obvious to modify the device in the Tsuchiya device by fabricating the crown portion from a material that is diverse from the material of the remaining shell members, the motivation being to provide another means for increasing the flexure of the crown on impact of a golf ball with the clubface, the flexure creating improved flight of the struck ball.

As to claims 2, 8 and 15, Motomiya shows it to be old in the art to fabricate a hollow club head using plural shell pieces, one of which incorporates the top or crown section along with a portion of the sides of the shell. The remaining diverse shell pieces define a face portion and a sole portion. See Figure 5 in Motomiya. The embodiment in Figure 5 of Motomiya is but one of several arrangements for the preparation of the shell pieces, with the further embodiments in Figures 2-4 detailing alternative designs for fabricating the distinct shell components. Tsuchiya likewise displays a plethora of club head shell combinations, which are assembled to form a hollow shell. See Figures 4 and 8A-8C in Tsuchiya. In view of the patent to Motomiya, it would have been obvious to modify the device in the cited art reference to Tsuchiya by forming the crown and at least a part of the side portion together, with the remaining portions (i.e., sole and face) formed separately and subsequently joining all of these pieces to come up with a complete hollow club head, the motivation being to simply provide another convenient manner in which to join the club head pieces. As to the specific "press-molding" limitation of claims 2 and 15, this limitation would not appear to bear much patentable weight in this structure claim. Nonetheless, even if the press-molding limitation is considered, it is clear that the skilled artisan would have known about the various

methods employed at the time of the invention, which may be used to fabricate a hollow metal club head based upon the material used for the shell, the availability of manufacturing machinery and the cost considerations in making the head.

As to claims 6 and 12, note that Motomiya further obviates the use of a rib (215), a part of which extends along the sole for reinforcement purposes. In view of this further teaching by Motomiya, it would have been obvious to modify the Tsuchiya device by providing a rib along the sole, the motivation being to enhance the strength of the hollow shell adjacent the sole.

As to claims 3 and 9, Tsuchiya shows a crown having a thickness between 0.6 and 3 mm (col. 10, lines 10-14).

As to claims 4, 5, 10 and 11, while Tsuchiya does not disclose the specific values for Young's modulus, it is clear from a reading of the entirety of the prior art documents cited that the selection of a material or combination of materials to take advantage of the known properties of said material(s) would have been obvious to one having ordinary skill in the art. In addition, the obviousness in the selection of a known material has been established under the Patent statutes. See *In re Hopkins*, 145 USPQ 140. Moreover, the patent to Hoshi specifically details that the construction of the club head, particularly the thickness of the shell pieces, is carried out with a consideration of the Young's modulus of the material selected for the head (col. 2, lines 56-65). In Hoshi, a distinct relationship has been acknowledged among the desired Young's modulus, the thickness of the crown and the material chosen. Since the applicant has not invented the claimed materials having the claimed Young's modulus values and since the

applicant has merely selected materials exhibiting a Young's modulus that is optimally compatible with the particular thickness of the shell, the specific claimed values are not deemed critical.

As to claims 13, 14 and 15 and regarding the thickness requirements of the various shell segments of the head, i.e., the sole, crown, side and/or face portions, note column 4, lines 48-56 along with Figures 1, 5 and 6 in the primary Tsuchiya reference. As for the claimed material alloy requirement of claim 14, note column 9, line 11 through column 10, line 2 in Tsuchiya, wherein it is clear that Tsuchiya discloses or comprises at least the claimed elements.

As to claims 1, 7, 13, 14 and 15, and the specific limitation "and an intersection angle between the crown portion and the side portion is larger than 90 degrees", reference is made to the cited references to Kusumoto and Murphy, each of which shows it to be old in the art to fashion a wood style club head with an intersection between the crown and a side portion. See Figures 6A, 6B and 6C in Kusumoto as well as Figure 5 in Murphy. Reference is also made to the cited references to Dekura and Imai. See Figure 1 at the toe side-crown interface in Dekura and Figure 1 in Imai, again at the toe side-crown interface. While the references do not provide any specific reason for the 90 degree arrangement, one may safely conclude that such only represents an obvious design variation over prior art wood type club heads, given the enormous variance in club head design available in the art. The teaching in each one of these four cited references, namely Murphy, Kusumoto, Dekura and Imai clearly and unequivocally set forth to one of ordinary skill in the art that the specific feature of a larger than 90

degree intersection between the crown and side portions is so well known in the art as having been repeatedly shown to be used as part of hollow metal club heads, that the use of this feature as part of another hollow metal club head design would have without question been obvious at the time of the invention. Here, each one of the prior art teachings to Murphy, Kusumoto, Dekura and Imai clearly obviates the inclusion of the claimed larger than 90-degree angle within a hollow metal club head design.

As to claim 14, note that the identification of an upper half portion and lower half portion corresponding to the upper side portion and lower side portion, respectively, of the side portion is purely subjective. In other words, every hollow metallic shell club head may be divided into an upper and lower half, regardless of whether the club head is fashioned from a plurality of metallic shell members or from a single casting. Here, Tsuchiya clearly includes a side portion with an upper side portion corresponding to the upper half portion and a lower side portion corresponding to the lower half portion. As for the claim requirement that the sole portion be thicker than the lower side portion, such is clearly the case, as evidenced by the dimensions provided for the sole (t3) and the side portion (t2). As for the claim requirement that the various shell portions are molded by casting, this limitation would not appear to bear much patentable weight in this structure claim. Again, even if the “molded by casting” limitation is considered, it is clear that the skilled artisan would have known about the various methods employed at the time of the invention, which may be used to fabricate a hollow metal club head based upon the material used for the shell, the availability of manufacturing machinery and the cost considerations in making the head.

As to claim 15, Tsuchiya provides the ability to dimension the sole and side portions to be thicker (in cross-section) than the crown smaller (in cross-sectional thickness) than the face portion, as evidenced by the ranges for the various thicknesses (t1, t2, t3), as outlined on column 4, lines 48-56.

As to claims 16 and 17, the patent to Tsuchiya shows every feature claimed with the exception of 1) an upper side portion having a Young's modulus lower than the lower side portion and the hosel portion and 2) a crown and upper side portion each having a Young's modulus lower than the face and sole portions. Tsuchida is cited to show that it is old in the art to provide a golf club head with a top portion that exhibits a lower modulus than the remainder of the shell. More specifically, the crown portion (5) is made of a first material with a modulus of 210 GPA, while the remainder of the shell is made of a material having a modulus of between 150-250 GPA (col. 6, lines 44-57). Although Tsuchida is mainly concerned with a club head in which the center includes a core material (12), a similar arrangement showing the flexibility of the crown is evidenced in a club head having a hollow interior, such being the case with the further teaching to Hoshi. Specifically, Hoshi shows a club head in which the crown portion (14b) is made of a material in wherein the Young's modulus differs from the modulus of at least the sole portion (col. 6, lines 4-16). In a manner similar to Tsuchida, the crown in the Hoshi device is allowed to flex during impact of the clubface with a ball so that the flight distance of the ball is increased and the sweet spot area of the clubface is enlarged to better enhance the directional stability of a struck ball. See col. 1, lines 35-45 in Hoshi and col. 6, lines 18-29 in Tsuchida. All of Tsuchiya, Hoshi and Tsuchida

are concerned with enhancing the repulsion characteristics of the face for increasing the flying distance of a struck golf ball. Thus, in view of the patents to Hoshi and Tsuchida, it would have been obvious to modify the device in the Tsuchiya device by fabricating the upper side portion with a Young's modulus lower than the lower side portion and the hosel portion along with a crown and side portion each having a Young's modulus lower than the face and sole portions, the motivation being to provide another means for increasing the flexure of the crown on impact of a golf ball with the clubface, the flexure creating improved flight of the struck ball. Note that the identification of an upper half portion and lower half portion corresponding to the upper side portion and lower side portion, respectively, of the side portion is purely subjective. In other words, every hollow metallic shell club head may be divided into an upper and lower half, regardless of whether the club head is fashioned from a plurality of metallic shell members or from a single casting. Here, Tsuchiya clearly includes a side portion with an upper side portion corresponding to the upper half portion and a lower side portion corresponding to the lower half portion.

As to claim 18, and as for the claim requirement that the sole portion be thicker than the lower side portion, such is clearly the case, as evidenced by the dimensions provided for the sole (t3) and the side portion (t2). Moreover, Tsuchiya provides the ability to dimension the sole and side portions within a wide range of dimensional cross-thickness configurations.

As to claim 19, and as for the claim requirement that the various shell portions are molded by casting, this limitation would not appear to bear much patentable weight

in this structure claim. Again, even if the "molded by casting" limitation is considered, it is clear that the skilled artisan would have known about the various methods employed at the time of the invention, which may be used to fabricate a hollow metal club head based upon the material used for the shell, the availability of manufacturing machinery and the cost considerations in making the head.

As to claim 20, reference is made to the cited references to Kusumoto and Murphy, which show it to be old in the art to fashion a wood style club head with an intersection between the crown and a side portion. See Figures 6A, 6B and 6C in Kusumoto as well as Figure 5 in Murphy. Reference is also made to the cited references to Dekura and Imai. See Figure 1 at the toe side-crown interface in Dekura and Figure 1 in Imai, again at the toe side-crown interface. While the references do not provide any specific reason for the 90 degree arrangement, one may safely conclude that such only represents an obvious design variation over prior art wood type club heads, given the enormous variance in club head design available in the art. The teaching in each one of the four references, namely Murphy, Kusumoto, Dekura and Imai clearly and unequivocally sets forth to one of ordinary skill in the art that the specific feature of a larger than 90 degree intersection between the crown and side portions is so well known in the art as having been repeatedly shown to be used as part of hollow metal club heads, that the use of this feature as part of another hollow metal club head design would have without question been obvious at the time of the invention. Here, each of the prior art teachings to Murphy, Kusumoto, Dekura and Imai clearly

obviates the inclusion of the claimed "larger than 90 degrees" angle within a hollow metal club head design.

(10) Response to Argument

A. Rejection of claims 1-15 under §103(a) over Tsuchiya, in view of Motomiya, Hoshi, Tsuchida, Kusumoto, Murphy, Dekura and Imai.

Claims 1-20 STAND rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya (U.S. Patent No. 5,346,217) in view of Motomiya (U.S. Patent 4,438,931), Hoshi (U.S. Patent No. 5,205,560), Tsuchida (U.S. Patent No. 5,255,913), Kusumoto (U.S. Patent 6,634,958), Murphy (U.S. Patent No. 6,332,847), Dekura (U.S. Patent No. 5,538,246) and Imai (U.S. Patent No. 6,056,649).

1. Claims 1-15 are not patentable over Tsuchiya, in view of Motomiya, Hoshi, Tsuchida, Kusumoto, Murphy, Dekura and Imai.

In the arguments received 12/15/2008, the appellant contends that reliance on the drawing figures in the prior art references of record to show a larger than 90 degree angle between the crown portion and the side portion, as explained by the last Office action, is impermissible because the drawings are not drawn to scale and because the prior art references do not provide further details in the written text about the angle between the crown and side portions. Moreover, the appellant contends that the claimed 90 degree angle is important in that it enables casting of the club head to be more easily performed.

In response to these arguments and with respect to the use of the drawings of the prior art to show the claimed 90 degree angle, the appellant's attention is directed to MPEP 2125, which states:

> Drawings and pictures can anticipate claims if they clearly show the structure which is claimed. In re Mraz, 455 F.2d 1069, 173 USPQ 25 (CCPA 1972). However, the picture must show all the claimed structural features and how they are put together. Jockmus v. Leviton, 28 F.2d 812 (2d Cir. 1928). The origin of the drawing is immaterial. For instance, drawings in a design patent can anticipate or make obvious the claimed invention as can drawings in utility patents. When the reference is a utility patent, it does not matter that the feature shown is unintended or unexplained in the specification. The drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art. In re Aslanian, 590 F.2d 911, 200 USPQ 500 (CCPA 1979).
> See MPEP § 2121.04 for more information on prior art drawings as "enabled disclosures." (emphasis added).

In this case, the prior art drawings in each one of the references to Kusumoto, Murphy, Dekura and Imai clearly show an intersection angle between the crown portion and the side portion to be larger than 90 degrees. See Figures 6A, 6B and 6C in Kusumoto as well as Figure 5 in Murphy. See Figure 1 at the toe side-crown interface in Dekura and Figure 1 in Imai, again at the toe side-crown interface. Each one of the four references, namely Murphy, Kusumoto, Dekura and Imai, (along with many others references not cited) clearly suggest to one of ordinary skill in the art that the specific feature of a larger than 90 degree intersection between the crown and side portions is well known in the art and thus the incorporation of this 90 degree angle intersection within the primary Tsuchiya device would have been obvious to one of ordinary skill in the art at the time of the invention. The prevalence in the art of this claimed feature has been exhaustively depicted in the current Office action. It is clear that the skilled artisan

would therefore have been motivated to provide a more curved appearance to the Tsuchiya device, if simply only for aesthetic purposes.

With respect to the applicant's argument that the claimed 90 degree angle is important at it enables casting of the club head to be more easily performed, it is noted that the casting procedure does not impart patentable weight to the claim. See MPEP §2113. It is noted that the claim language simply states that the claimed product is made of metal having specific properties. Once the Office provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

2. Claims 2-16 and 20 are not patentable over Tsuchiya, in view of Motomiya, Hoshi, Tsuchida, Kusumoto, Murphy, Dekura and Imai.

Concerning the appellant's argument that the reference to titanium alloy in Tsuchiya provided in the last Office action allegedly does not apply to the sole portion, it is noted that the claim language in Tsuchiya is open-ended and does not preclude other elements of the head from being made of a titanium alloy. Here, the disclosure of Tsuchiya must be considered in its entirety. The appellant is respectfully urged to review column 6, line 64 through column 7, line 27 in Tsuchiya, which details the % composition of the elements that make up the titanium alloy, as well as column 8, lines

1-15 in Tsuchiya, which details how at least the face (21) and the sole (23) are made of titanium alloy.

B. Rejection of claims 16-20 under §103(a) over Tsuchiya, in view of Motomiya, Hoshi, Tsuchida, Kusumoto, Murphy, Dekura and Imai.

Claims 16-20 STAND rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya (U.S. Patent No. 5,346,217) in view of Motomiya (U.S. Patent 4,438,931), Hoshi (U.S. Patent No. 5,205,560), Tsuchida (U.S. Patent No. 5,255,913), Kusumoto (U.S. Patent 6,634,958), Murphy (U.S. Patent No. 6,332,847), Dekura (U.S. Patent No. 5,538,246) and Imai (U.S. Patent No. 6,056,649).

1. Claims 16-20 are not patentable over Tsuchiya, in view of Motomiya, Hoshi, Tsuchida, Kusumoto, Murphy, Dekura and Imai.

Concerning the appellant's arguments that the prior office actions have ignored the distinct recitations of claim 16 which separately recites a crown portion and the side portion that includes an upper side portion corresponding to an upper half portion of the side portion and a lower side portion corresponding to a lower half portion of the side portion, it is noted that the claim language is being given its broadest reasonable interpretation commensurate with the description in the specification. Here, the disclosure provides that the club head includes, in one embodiment, a separate face portion, a lower half that integrally includes a casting, forging or press-molding of a sole and lower side portion, an upper half that integrally includes a casting, forging or press-molding of an upper side portion and a crown, and finally a separately formed and attached hosel. For the appellant to specify that the upper side portion does not refer to

the separately claimed crown portion would imply that the material used for the upper side portion is diverse from the material used for the crown portion. Here, this is not the case, as the specification [PAGE 5] and the drawings (Figure 2) clearly detail that the crown is indeed a part of the upper half of the club head, which also includes the upper side portion.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Sebastiano Passaniti/

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